

AMENDMENT UNDER 37 CFR § 1.111  
Serial No. 10/801,711

### **AMENDMENTS TO THE CLAIMS**

This listing of the claims replaces all prior versions, and listings, of claims in the application:

### **LISTING OF CLAIMS**

1. [Currently Amended] A method of dynamically controlling a bias point of a photodiode of an optical receiver, the method comprising iteratively repeating steps of:  
  
detecting a performance parameter indicative of an eye opening of an optical signal received by the optical receiver; ~~and~~  
  
comparing a current value to a previous value of the performance parameter;  
  
calculating an adjustment step size and direction based on the comparison result; and  
  
adjusting a bias voltage of the photodiode based on the calculated adjustment step size and direction so as to optimize a value of the detected performance parameter.
2. [Original] A method as claimed in claim 1, wherein the performance parameter comprises any one of:  
  
an eye opening ratio;  
  
an Optical signal to Noise ratio (OSNR);  
  
an eye quality (IQ); and  
  
a bit error rate.
3. [Currently Amended] A method as claimed in claim 1, wherein the step of adjusting the bias voltage comprises steps of:  
  
~~comparing a current value to a previous value of the performance parameter;~~  
  
~~calculating an adjustment step size and direction based on the comparison result;~~  
  
calculating an updated bias setting value based on a current value of the bias setting and the calculated adjustment step size and direction; and

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generating the bias voltage based on the updated bias setting value.

4. [Original] A method as claimed in claim 3, wherein the step of calculating an adjustment step direction comprises a step of reversing the step direction if the current value of the performance parameter is less than the previous value.
5. [Original] A method as claimed in claim 3, wherein the step of calculating an adjustment step size comprises a step of scaling the step size with a relative magnitude of the current value of the performance parameter.
6. [Currently Amended] A controller for dynamically optimizing a bias point of a photodiode of an optical receiver, the controller comprising:  
  
detector means for detecting a performance parameter indicative of an eye opening of an optical signal received by the optical receiver; and  
  
a processor for calculating a bias point that optimizes a value of the detected performance parameter, the processor operating under control of software code adapted to:  
  
compare a current value of the performance parameter to a previous value;  
  
calculate an adjustment step size and direction based on the comparison result;  
  
and  
  
calculate the bias point based on the calculated adjustment step size and direction.
7. [Original] A controller as claimed in claim 6, wherein the performance parameter comprises any one of:  
  
an eye opening ratio;  
  
an Optical signal to Noise ratio (OSNR);  
  
an eye quality (IQ); and  
  
a bit error rate.

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8. [Original] A controller as claimed in claim 7, wherein the detector means comprises a clock and data recovery (CDR) circuit of the receiver.
9. [Original] A controller as claimed in claim 7, wherein the detector means comprises a detector circuit associated with a clock and data recovery (CDR) circuit of the receiver.
10. [Currently Amended] A controller as claimed in claim 6, wherein the processor further operates under control of software code adapted to:
- ~~compare a current value of the performance parameter to a previous value;~~
- ~~calculate an adjustment step size and direction based on the comparison result; and~~
- calculate an updated bias setting value based on a current value of the bias setting and the calculated adjustment step size and direction
11. [Currently Amended] An optical receiver for receiving an optical communications signal, the receiver comprising:
- a photodiode for converting the optical communications signal into a corresponding electrical signal;
- detector means responsive to the electrical signal for detecting a performance parameter indicative of an eye opening of the optical signal;
- a processor for calculating a bias point of the photodiode that optimizes a value of the detected performance parameter, the processor operating under control of software code adapted to:
- compare a current value of the performance parameter to a previous value;
- calculate an adjustment step size and direction based on the comparison result;
- and
- calculate the bias point based on the calculated adjustment step size and direction.; and

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a bias generator for supplying a bias signal to the photodiode based on the calculated bias point.

12. [Original] A receiver as claimed in claim 11, wherein the performance parameter comprises any one of:
  - an eye opening ratio;
  - an Optical signal to Noise ratio (OSNR);
  - an eye quality (IQ); and
  - a bit error rate.
13. [Original] A receiver as claimed in claim 12, wherein the detector means comprises a clock and data recovery (CDR) circuit of the receiver.
14. [Original] A receiver as claimed in claim 12, wherein the detector means comprises a detector circuit associated with a clock and data recovery (CDR) circuit of the receiver.
15. [Currently Amended] A receiver as claimed in claim 11, wherein the processor further operates under control of software code adapted to:
  - ~~compare a current value of the performance parameter to a previous value;~~
  - ~~calculate an adjustment step size and direction based on the comparison result; and~~
  - calculate an updated bias setting value based on a current value of the bias setting and the calculated adjustment step size and direction.